

The specification stands objected to as failing to provide proper antecedent basis for the claimed subject matter. More particularly, the specification is faulted as not including the subject matter of original claims 8 and 9 (i.e., the embodiment wherein the matting agent comprises silica having 0.9-1.2 cc/g pore volume). As set forth above, Applicants have amended page 5 of the subject-specification to include this subject matter. Applicants respectfully request withdrawal of this objection.

Claim 41 stands rejected under 35 U.S.C. §112, first paragraph, on the grounds that the specification does not provide an enabling disclosure for a coating composition comprising an amine-modified polyether acrylate and any known matting agent. As set forth herein, Applicants have amended claim 41 to include "wax-containing silica matting agent." Accordingly, Applicants respectfully request withdrawal of this rejection.

Claims 34-41 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Office Action indicates that the use of the term "acrylate" is not clear and indicates that the term "acrylate-containing compounds" should be utilized instead. Even though Applicants submit that the artisan would readily understand that the phrase "component comprises acrylate" would be interchangeable with "acrylate-containing compound," claims 30, 34 and 38 have been amended to recite "acrylate-containing compounds." Thus, Applicants respectfully request withdrawal of this rejection.

Claims 31, 39, 40 and 41 are faulted as not being clear as to whether the Applicants intend to set forth a coating or a composition. Applicants have amended claims 33 and 41 as suggested by the Examiner, and thus, withdrawal of the rejection is respectfully requested.

Claim 33 is described as not being clear as to whether Applicants intend to set forth "matting efficiency" or "gloss units" of the coating. Applicants have amended claims 32, 40 and 41 to recite "matting efficiency," thereby obviating this rejection.

In view of the above-mentioned amendments to claims 1, 30, 32-34 and 38-41, Applicants hereby respectfully request withdrawal of the rejection under 35 U.S.C. §112, second paragraph.

Claims 1-10 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,326,395 to Aldcroft et al. (hereinafter Aldcroft et al.). These claims have been rejected based upon combining several generic ranges described by Aldcroft et al. with respect to pore volume and particle size of silica in matting agents and wax content in the matting agents. More particularly, it is stated in the Office Action that Aldcroft et al. discloses, "a wax coated silica matting agent wherein the pore volume is between 0.8 to 2.5 cc/g, the particle size is between 5-9 microns and the wax content is from 5-20 % w/w based on the weight of the silica." Applicants respectfully request reconsideration and withdrawal of this rejection.

The present invention centers around the discovery that silica matting agents having a combination of elements, including wax content, and pore volume and particle size of the silica used in the matting agents, provides unexpected results in various coating compositions. See page 4, lines 17-26 of the subject specification. These unexpected results include increased matting efficiency and viscosity stability, and that these matting agents may be utilized in both fast and slow curing systems. See pages 11 and 12 of the subject specification.

In contrast, there is no hint in the teachings of Aldcroft et al. that the combination of wax content and pore volume and particle size of the silica in the matting agent as recited therein would provide unexpected improvements in matting efficiency and viscosity stability, as is set forth in the specification and the claims of the present application. Aldcroft et al. is primarily concerned with utilizing a mixture of different waxes to improve the problem encountered with "hard settlement" of the silica in the paint or laquer. See column 2, lines 5-11.

The ranges of the wax content, and the silica pore volume and particle size set forth in the present claims are not identical to those ranges set forth in Aldcroft et al., but there is an overlap. Applicants respectfully submit that where the Aldcroft et al. ranges with respect to pore size and particle size of the silica and wax content in the matting agents overlap with those recited in claims 1-10, there is no anticipation. See for example, where claimed alloys possess properties or

characteristics that establishes the critical nature of the claimed range of an ingredient, isolated disclosures of alloys which by name fall within that range do not anticipate when they lack in structure or performance of the characteristics of the claimed alloys. *Rem - Cru Titanium, Inc. v. Watson, Comr. Pats.* (DCDC 1956) 147 FSupp. 915, 112 USPQ 88.

Because the ranges of the silica pore volume and particle size and wax content of the matting agent described in Aldcroft et al. and set forth in the present claims are not identical, and in view of the unexpected improved performance of the present invention resulting from the ranges that are instantly claimed, a rejection under 35 U.S.C. §102(b) is improper. Accordingly, Applicants respectfully request withdrawal of this rejection.

Claims 1-10, 20-23, 25, 27-29, 34-37, 39 and 40 stand rejected under 35 U.S.C. §103(a) as being in patentable over WO 98/58030 (hereinafter '030 PCT Patent Application), in view of Aldcroft et al. Applicants respectfully request reconsideration and withdrawal of this rejection.

The '030 PCT patent application describes a wax-coated silica having among other characteristics, a wax content of 6-15 wt %. See page 5, lines 4-19. The crux of the '030 PCT patent application lies in the use of diluents (i.e., vinyl monomers) that enables use of the matting agent in cationic curable systems. See page 2, lines 27-34. There is no mention or suggestion that any of the presently claimed elements (i.e., pore volume and particle size of the silica, and the wax content of the matting agent) provides any difference in the resulting properties of the coatings. The '030 PCT patent application is completely silent regarding any effect that the different proportions or ranges of these elements would have on matting efficiency or viscosity stability. As above-mentioned, even though Aldcroft et al. discloses a wax content of 15-20 % by weight of a wax-coated silica matting agent, it teaches that one should minimize the amount of wax utilized in the matting agent. In particular, Aldcroft et al., suggests using less wax content since there is no increase of desirable properties imparted to the silica matting agent and the use of increased wax would be considerably more costly (col. 2, lines 45-48).

Applicants emphasize that there would have been no motivation for the artisan, when viewing Aldcroft et al. and the '030 PCT patent application, to have

utilized the three ranges (i.e., the amounts of wax content, and pore volume and particle size of the silica) as recited in the instant claims. The '030 PCT patent application describes a range of 6-15 wt % wax content in a matting agent and Aldcroft et al. specifically mentions that the use of additional wax in such matting agents provides no improvement, just an increase of cost. The artisan would have been motivated to utilize a wax content of less than 10%, since these are the preferred embodiments set forth in Aldcroft et al. examples and Aldcroft et al. teaches to use less wax content.

Thus, one of ordinary skill in the art would not have even arrived at the presently claimed invention, and a *prima facie* case of obviousness under 35 U.S.C. §103 has not been presented. Withdrawal of the 35 U.S.C. §103 rejection is respectfully requested by the Applicants.

Even if a *prima facie* case of obviousness under 35 U.S.C. §103 has been presented, the unexpectedly improved results obtained by the presently claimed invention rebuts any such *prima facie* case. If the proportions are critical to the properties of a novel product, they can render the product patentable even though the percentages of ingredients fall within the broader ranges of the prior art. *Becket v. Coe* (CADC 1938) 98 F2d 332, 38 USPQ 26; *In re Becket et al.* (CCPA 1937) 88 F2d 684, 33 USPQ 33; *In re Arness* (CCPA 1938) 95 F2d 344, 37 USPQ 217.

In addition, the fact that the percentage of the chemical components of a chemical compound fall within the general proportions of the references does not preclude patentability where the disclosure of the specification is persuasive of the criticality of the claimed proportions, *Ex parte Selby* (POBA 1966) 153 USPQ 476; *In re Waymouth et al.* (CCPA 1974) 499 F2d 173, 182 USPQ 290; *In re Russell* (CCPA 1971) 439 F2d 1228, 169 USPQ 426.

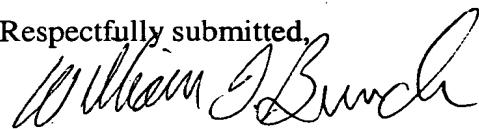
In the instant application, Applicants respectfully submit that the data set forth in Tables 1-3 and Figures 1-6 demonstrate the unexpectedly improved results of the claimed invention over various comparative Examples. It is interesting to note that comparative Examples 1 and 3, as well as SYLOID® ED 30 fall within the ranges set forth in Aldcroft et al. These three comparative Examples yield matting efficiencies that are significantly worse than the matting efficiency of Example 1 of Applicants' invention. Moreover, Figure 4

demonstrates that comparative Example 3 and the ED 30 Example are significantly less stable over time than the matting agent of Example 1.

Accordingly, it is submitted that the claimed matting agent provides unexpectedly improved results over those set forth in Aldcroft et al. and the '030 PCT patent application, which rebuts any *prima facie* case of obviousness that may have been presented in the Office Action. Applicants respectfully request withdrawal of the above-mentioned 35 U.S.C. §103 rejection.

In view of the above amendments and remarks, Applicants respectfully submit that the above-identified patent application is now in condition for allowance. Accordingly, Applicants respectfully solicit an indication to that effect in the form of a Notice of Allowability.

Respectfully submitted,



William D. Bunch  
Attorney for Applicant  
Reg. No. 35,027

Tel: (410) 531-4333  
W. R. Grace & Co.-Conn.  
7500 Grace Drive  
Columbia, Maryland 21044

Charge: DAV/SIL

## APPENDIX 1

The aforementioned objects are unexpectedly obtained by employing silica matting agents having a maximum pore volume of 1.4 ml/g and a wax content of at least 15% and maximum of 30 % by weight. The wax content typically is in the range of 18 to 22% by weight. The wax preferably has a melting point in the range of 60-120°C, and most preferably in the range of 60-90°C. The matting efficiency of the agent is also affected by the particle size of the invention. The invention has a median particle size in the range of 2.0-12.0  $\mu$ m, with a preferred range of 2.0-5.0  $\mu$ m. It is also unexpected that the matting agents having particles sizes in the lower part of above ranges can enhance matting efficiency further without significant adverse affects on the viscosity of the coating composition.

### APPENDIX 3

The silica used to prepare the invention can be that used to prepare conventional porous silica flattening agents, provided the silica has a pore volume in the range of 0.8 to 1.4 cc/g. Preferably, the pore volume of the silica is in the range of 0.9-1.2 cc/g. The pore volume referred to herein is determined by nitrogen porosimetry, described later below.

APPENDIX 5

1. (Thrice Amended) A matting agent composition comprising silica and wax wherein the composition has a median particle size in the range of 2 to about 6 5 microns, a wax content in the range of about 18 to 30% by weight of the silica and the silica has a pore volume in the range of about 0.8 to 1.4 cc/g.

30. (Once Amended) A coating composition according to claim 20 wherein the radiation curable component comprises at least one acrylate-containing compound and the coating composition comprises 2% by weight or less of matting agent component.

32. (Thrice Amended) A coated substrate comprising a substrate and a coating thereon prepared from a composition of claim 30 and the coating has a gloss matting efficiency of about 20 gloss units or less at 60°.

33. (Thrice Amended) A coated substrate comprising a substrate and coating thereon wherein the coating comprises amine-modified polyether acrylate and is prepared from a composition comprising amine-modified polyether acrylate and about 12% by weight wax-containing silica matting agent component or less and the coating has a matting efficiency of about 60 gloss units or less at 60°.

34. (Thrice Amended) A coating composition comprising a radiation curable component and a matting agent component, the matting agent component having a median particle size in the range of 2-12 microns, a wax content in the range of about 15 to 30% by weight of the silica and a silica having a pore volume in the range of about 0.8 to 1.4 cc/g. and wherein the radiation curable component comprises at least one acrylate-containing compound.

38. (Once Amended) A coating composition according to claim 34 wherein the radiation curable component comprises at least one acrylate-containing compound and the coating composition comprises 2% by weight or less of matting agent component.

40. (Twice Amended) A coated substrate comprising a substrate and a coating thereon prepared from a composition of claim 34 and the coating has a matting efficiency gloss of about 20 gloss units or less at 60°.

41. (Twice Amended) A coated substrate comprising a substrate and coating thereon prepared from a ~~coating which comprises amine-modified polyether acrylate and is prepared from composition comprising amine-modified polyether acrylate and about 12% by weight wax-containing silica~~ matting agent component or less and the coating has a matting efficiency gloss of about 70 gloss units or less at 60°.